

Patent
10/008,999

IN THE CLAIMS

Please CANCEL Claims 19-22.

Please AMEND Claim 1 as shown.

1. (Currently Amended) A coronary bypass procedure comprising:
positioning a heat transfer element in a blood vessel of a patient;
cooling the body of the patient to less than 35°C using said heat transfer element; and
forming a fluid communicating graft between an arterial blood supply and the coronary artery;

wherein the patient's blood is oxygenated with the patient's lungs and wherein blood is circulated using the patient's heart or using an intracorporeal pump.

wherein said heat transfer element is attached to a distal end of a flexible catheter, wherein said catheter is used in the step of positioning said heat transfer element in said blood vessel, and wherein said catheter is used to convey chilled or heated fluid to the interior of said heat transfer element, and

further wherein the heat transfer element further comprises a plurality of exterior surface irregularities, said surface irregularities being shaped and arranged to create mixing in the blood, and

still further wherein the heat transfer element further comprises a plurality of interior surface irregularities within said heat transfer element, said interior surface irregularities being shaped and arranged to create mixing in fluid within said heat transfer element, and

still further wherein said interior and exterior surface irregularities comprise one or more helical ridges and one or more helical grooves.

2. (Original) The coronary bypass procedure of claim 1, wherein the heat transfer element absorbs at least 150 Watts of heat during cooling.

3. (Original) The coronary bypass procedure of claim 1, further comprising warming the body of the patient to about 37 °C using said heat transfer element, subsequent to the step of forming the fluid communicating graft.

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4. (Original) The coronary bypass procedure of claim 1, wherein the step of forming a fluid communicating graft between the arterial blood supply and the coronary artery is preformed on a beating heart during bradycardia of the heart.

5. (Original) The coronary bypass procedure of claim 1, wherein the heart is arrested or nearly arrested during at least a portion of the step of forming the fluid communicating graft.

6. (Original) The coronary bypass procedure of claim 5, wherein the heart is chemically arrested.

7. (Original) The coronary bypass procedure of claim 5, wherein the heart is electrically arrested.

8. (Original) The coronary bypass procedure of claim 5, wherein the patient's circulation is supported with a pump positioned in the patient's vasculature.

9. (Original) The coronary bypass procedure of claim 8, wherein the pump is at least partially positioned in the left ventricle.

10. (Original) The coronary bypass procedure of claim 9, wherein the pump is introduced through the femoral artery.

11. (Original) The coronary bypass procedure of claim 1, wherein the heartbeat is intermittently arrested and stimulated; and wherein at least a portion of the step of forming the fluid communicating graft is carried out during periods of heartbeat arrest.

12. (Original) The coronary bypass procedure of claim 11, wherein the heart is chemically arrested and wherein the heartbeat is electrically stimulated.

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13. (Original) The coronary bypass procedure of claim 12, wherein the heart is chemically arrested using one or more beta-blockers.

14. (Original) The coronary bypass procedure of claim 11, wherein the heart is electrically arrested and electrically stimulated.

15. (Original) The coronary bypass procedure of claim 1, wherein the heat transfer element is positioned in the venous vasculature.

16. (Original) The coronary bypass procedure of claim 15, wherein the heat transfer element is positioned in the inferior vena cava.

17. (Original) The coronary bypass procedure of claim 16, wherein the heat transfer element is introduced into the femoral vein.

18. (Original) The coronary bypass procedure of claim 17, wherein the heat transfer element is about 4 to 5 mm in diameter.

19-22. (Canceled)

23. (Original) The coronary bypass procedure of claim 1, wherein the use of a cardiopulmonary bypass system and obstruction of the ascending aorta are avoided.

24. (Original) The coronary bypass procedure of claim 1, wherein the body of the patient is cooled to $32 \pm 2^\circ \text{C}$ using said heat transfer element.

25. (Original) The coronary bypass procedure of claim 6, wherein the heart is arrested using a beta-blocker.

26-35. (Canceled)